

SECURE E-COMMERCE SYSTEM
WITH GUARANTEED FUNDS AND NET SETTLEMENT

RELATED APPLICATIONS

This is a continuation-in-part of applications Serial No. 09/291,137 filed on April 12, 1999; Serial No. 09/061,316 filed on April 16, 1998; and Serial No. 08/964,425 filed on November 4, 1997.

FIELD OF THE INVENTION

The present invention relates to retail and business to business electronic commerce and to a secure transaction processing system that links customers and users of network commerce sites with their respective banks and the banks, in turn, with a funds settlement system. In the invention secure transactions are effected with guaranteed funds. Debits and credits may be monitored in real time as funds records associated with transactions are registered with regard to customer accounts and merchant accounts. Net settlement of accounts among participating financial institutions is accomplished on a periodic basis.

BACKGROUND AND SUMMARY OF THE INVENTION

The related applications describe bank and business-centric networks that provide an entrance to a private network that serves as a gateway for e-commerce on the Internet and the World Wide Web. In alternative embodiments, the systems use Internet access to provide an entry portal to a private bank or business network, or a proprietary Web or Internet site where e-commerce may be conducted. (United States Letters Patent No. 5,787,403 and No. 5,899,982, which have application Serial No.

401,075 filed on March 8, 1995 as a common parent with application Serial No. 09/291,137). The applications also describe a substantially real time payment system in networks of merchants, customers and banks in which a special account debits funds from the memo-post file of a bank customer's DDA account and simultaneously credits the funds to the merchant's account (Serial No. 09/061,316 and Serial No. 08/964,425.) It is an object of the present invention to provide a bank-centric e-commerce portal that provides a secure entrance into an electronic commerce mall of specialized or pre-selected, and qualified, vendors or vendor groups. It is further an object to provide a real time payment system with access to good funds from a purchaser's bank account for immediate posting into a merchant's account at the merchant's bank at the time of a purchase transaction and to allow simultaneous real time monitoring of funds transfers. Net settlement of funds payable to and owing from participants is effected at periodic intervals.

It is a further object of the invention to establish a rule based system of customers and merchants and their financial institutions in a secure subscriber network for retail or business to business electronic commerce. In the system, net settlement of inter-institutional account debits and credits may be effected through at least daily periodic settlements with funds transfers optionally effected through the Federal Reserve or other national or institutional settlement exchange mechanism.

It is also an object to provide a comprehensive network integrating needs of consumers, banks, conventional businesses and Internet businesses in retail, consumer to business and business to business transactions. The network provides benefits to all groups: to consumers through a secure method of payment over the Internet at the

point of sale. At physical points of sale, the system offers a reduced chance of check handling errors and deposit based electronic payments. To merchants, the system reduces the use of checks and check cards and their associated fees, reduces fraud and allows the quicker availability of funds. In business to business relationships, the system provides a secure method of payment, better access to funds, reduction of fraud, and the availability of access to a credit line for purchases over the Internet. Likewise for Internet businesses, a reduction in fraud, a secure method of payment, quicker availability of funds, and quicker payment of funds for clients is achieved. In use of the system, banks and financial institutions will achieve a new source of fee income, a reduction in fraud and a new source of deposits.

And it is yet another object to provide customer anonymity in a secure transaction mechanism once the customer accesses the system at an authorized entry point.

The system generates user trust and confidence in e-commerce and network transactions by associating the system entry and administration with a bank, financial institution, or other custodian of account funds, having a pre-existing reputation for reliability, integrity and security. The system thereby promotes greater use of electronic networks for financial and transactional commerce on the Internet and the World Wide Web.

Additionally, it is an object to generate cost savings in purchase transactions, to expedite the shipment of goods involved in e-commerce, and to eliminate credit and payment risk to a merchant by providing a guarantee of funds available in the amount of the transaction before or at the time the transaction is made. It is also an object to

eliminate fraud, the interception of information, and identity theft in network transactions, whether such transactions are retail or business to business.

While "banks" may be referred to herein, the relevant industry is the "financial industry." Thus, the utility of the methods and systems described herein is not confined to "banks" as functionally restricted institutions in the historical sense, but rather extends to any firm or organization, referred to herein as a "custodian", engaging in the exchange or custody of funds or credit.

The invention is described more fully in the following description of the preferred embodiment considered in view of the drawings in which:

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a chart representing an e-commerce retail or business to business mall with multiple subscribing vendors. The Figure shows various relationships of merchants and customers and their respective financial institutions that maintain merchant and customer funds accounts.

Figure 2 shows a relationship of merchants and their banks, customers and their banks, and the commerce mall as interconnected by a network switch.

Figure 3 depicts layered security relationships and the protocols for user access to the system and transaction processing within the system.

Figure 4 shows a mechanism of customer access to a bank or financial institution that, in turn, allows a connection relationship through a bank portal or gateway to the network mall.

Figure 5 depicts the interrelationship of the master network switch with respect to interrelationships of subscribers to the system: the customer, the merchant, the customer's bank, the merchant's bank, the shipment of goods and materials from the merchant to customer, and a mechanism for effecting periodic settlement and funds transfer.

Figure 6 is a flow chart illustrating the sequence of steps in a typical transaction initiated by a customer achieving access to the mall through an Internet or other network connection.

Figure 7 is a flow chart illustrating the sequence of steps in a typical transaction initiated by a customer accessing the system through an entry point at the merchant's network or Web site.

Figure 8 illustrates a business to business application of the system without intermediaries.

Figure 9 illustrates a business to business application of the system with intermediaries.

Figure 10 illustrates a consumer on-line purchase with the system.

Figure 11 illustrates a business application of the system used with a third party employee reimbursement service.

Figure 12 shows a method of the system accomplishing payment of a non-on-us check introduced into the network switch.

DETAILED DESCRIPTION OF THE INVENTION AND THE PREFERRED EMBODIMENT

The invention facilitates secure network and Internet e-commerce and reduces transaction costs. In the system and method of the invention, electronic commerce, Web and Internet transactions involving purchases and guaranteed funds transfers are made faster and effected on a retail or business to business basis, in the preferred embodiment, by access permitted through a gateway associated with an institution that is a subscribing member of the system. Namely, a prospective customer or vendee may enter the system through a bank or institution gateway and obtain access to mall vendors passing through an institution firewall that is interconnected with the institution server. The server provides access to predetermined bank or institution files and services in a secure, virtual private network for the institution and its customers.

In general, the system may be characterized as an institution-centric electronic commerce system for effecting a real time register of a funds transfer associated with a transaction in a secure network in which net settlement of accounts occurs at periodic intervals, and in which funds balances may be monitored in relative real time. An association of user account custodians and merchant account custodians subscribe to a common rule set in which users and merchants are associated with their respective account custodians. A network having multiple components and sets of interconnections administers the system. Interconnections link user account custodians, merchant account custodians, users and merchants, users and their account

custodians, merchants and their account custodians, user account custodians, merchant account custodians and a settlement mechanism. A network (or Internet) commerce mall is provided including at least one merchant. The mall allows access by a user to the merchant for a transaction having a defined value and is accessible by a user through a gateway established by a user account custodian. A network switch links the mall with user account custodians, merchant account custodians and a settlement mechanism.

The system also includes a means in the network switch for receiving transaction information from the mall, such as user indicia, transaction value, and merchant identity. The switch associates user indicia with account custodians, associates merchants with their account custodians, and transmits a record of transaction value and, respectively, user indicia and merchant identity, to the user account custodian and to the merchant account custodian. Control means in the switch initiates settlement and effects net settlement of transaction values between and among user account custodians and merchant account custodians through participants in the system (effected by the switch), or by the Federal Reserve or other mechanism.

In Figure 1, a commerce mall 1 is shown. Subscribing customers C1, C2 CN are associated with their banks B1, B2 BN. Merchants M1, M2 MN are associated with merchant banks MB1 MBN. Customers and their banks and merchants and their banks are organized in the system in separate institution centered relationships, made secure, for example, by a firewall, certificate of authority, identity authentication system or other security mechanism 1B1 1BN and 1MB1 1MBN, *etc.*. The commerce mall 1 is likewise security protected by similar means 11.

to a hold account for settlement. When both the customer C1 and merchant M2 maintain an account at the same bank, the transaction is an ON US transaction 250 in which accounts at the same bank B1 are processed to register a real time transfer of actual funds from C1's account to M2's account. Where the transaction is not ON US, the transmission of record 301 triggers a bank to bank funds transfer instruction generated by the switch 2 at the bank to bank network level 31 and 21.

In lieu of transmission from the mall server 10 to the merchant bank server 300, mall server 10 may be interrelated with switch 2 (line 15) that will perform look up table associations and funds transfer instructions and communications analogous to those described above. Periodic settlement of all participating banks and the actual transfer of funds among banks corresponding to aggregate net funds owing or credited in a period is accomplished through conventional Federal Reserve settlement or other clearing house mechanism 100 at the network settlement level in which all merchant banks MB1 MBN and customer banks B1BN are interconnected with the switch 2 and the settlement mechanism 100. Funds transfer settlement 150 is accomplished with transfers between merchant bank 150M and customer bank 150C, or if made through switch 2, 150M' and 150C'.

EXAMPLE I

Figure 4 illustrates a transaction from a customer's C1's view. Customer C1, using a card, password log-in, biometric indicia or other means of access from a PC personal terminal, browser, ATM, kiosk, Web appliance or wireless device or other means 40, enters bank site B1, where CFR 203 is assigned to C1 for use when C1 enters mall 1. C1 makes a purchase from merchant MN which is identified by

authentication/introduction of the client to the merchant from the authorization bank.

In one variation, the client may select desired merchandise and make a purchase from the merchant, selecting a checking account option 63 as a method of payment. The merchant sends a record of the transaction information 64 (trace number, amount, merchant identification and other information such as a description of goods, *etc.*) to the switch 65, that in turn routes the information to the authorization bank 66 which converts the trace number, identifies the client account and authorizes a debit and memo/hard post item against the client's checking (DDA) account 67. At this point, in its file records, the authorization bank has information about the transaction, has isolated funds from the client account and maintains a record of a credit owing to the merchant to be paid to the merchant through the merchant's bank as a result of the transaction. At the same time, the switch routes corresponding transaction information to the merchant bank 68 for settlement and sends an authorization 69 to the merchant to allow the transaction to proceed. At the time of periodic settlement among the member banks 100, actual funds are transferred from 150C the authorization bank (from the client) to 150M the merchant bank (for the merchant) in the course of net settlement of all accounts of all member banks.

EXAMPLE II

Example II, described with reference to Figure 7, adapts the invention to client-customer/merchant transactions initiated by the client-customer through a pre-existing network connection directly between the client-customer and a network merchant. In this example, the client-customer signs on to the merchant's Internet site 70 where the client-customer already has an account with the merchant identified by an account

number that includes the routing and transit number of the authorization bank. After selecting merchandise, the client opts to make a purchase from the merchant and selects the credit line account option 71 as a means for payment. A transaction record is created (including transaction information such as amount, merchant identification and other information such as a description of goods, *etc.*), accompanied by a trace number which is transmitted 72 to the switch, that in turn routes 73 the information to the authorization bank which associates the merchant account number with the client-customer's bank account number and authorizes 74 a debit and memo/hard post item against the client's account. The switch routes corresponding transaction information to the merchant bank 75 and sends a transaction authorization 76 to the merchant. At the time of predetermined periodic settlement the switch effects the transfer of funds 77 to the merchant's bank from funds 78 in the client-customer's bank.

Through the Internet, World Wide Web, virtual private network (VPN), private or other network connection, a subscribing client signs on to bank's network site as a virtual or physical presence. The authorization bank makes transactions with merchants in the mall available on-line to the client through the CFR 203. Although sometimes referred to as "number," the CFR, UTN, BR, TIR and other records, as unique identifiers, may include letters, text, symbols and other characters in addition to digital indicia *per se* and may be encoded or encrypted with security mechanisms. Examples of applicable mechanisms of file handling, file structures and formats and funds settlement are discussed in United States Letters Patent No. 5,717,868, "Electronic Payment Interchange Concentrator" assigned to the assignee hereof.

In the system virtual debits and credits are created and processed in real time and merchants are guaranteed good funds in the approved transactions. Point of sale transactions are serviced in real “brick” stores and virtual “click” stores. Transaction records are maintained at the switch in a mailbox assigned to the merchant and/or bank for real time lookup to determine accumulated funds debit or credit for effective cash management and planning *See* Patent No. 5,717,868.

Efficiencies in business to business applications are obtained. Figure 8 illustrates a business to business application of the system without intermediaries. ABC Company 80, for example, will obtain access to a participating supplier group or consortium “mall” 81 of vendors 81X, 81Y, 81N by way of entry through ABC’s bank’s portal 85P where ABC’s authentication is established by a user card, biometric or other identification. The business to business variation of the system is analogous to the customer / vendor system illustrated in Figure 3. In this example, the “mall” is a virtual private network 86 comprised of the multiple suppliers and vendors 81X ... 81N offering goods and supplies and displaying specifications, delivery and quantity information, pricing and other criteria on the vendor’s web site, or providing auction services and the like for commercial purchases. A record of the buyer’s selection of goods or supplies (*e.g.*, 10,000 widgets @ \$64.83 per item) for purchase from the supplier 81N, the buyer’s CFR, supplier’s MIR and transaction information TIR 210 is transmitted by the VPN server 86 to network switch 2. The switch transmits a purchase record including at least the CFR and TIR to ABC’s bank 85B. Bank 85B authenticates the purchaser identity and memo hard posts a debit 80D against the purchaser’s account, cash or credit line, to support the transaction. The switch 2 record

the purchaser's account (cash or credit) to support the transaction. Switch 2 also credits supplier bank 97 with a record of actual funds in the amount of the transaction for credit to supplier's account 97C, records a debit against DEF's bank and reports the transaction to the supplier. The goods are assembled at supplier's distribution center 91ND and shipped to DEF 90S. At settlement effected by the switch 100, actual funds corresponding to 97C and 95D are transferred between banks records 87 and 95B. Nevertheless, at the time of the transaction, the supplier is credited with good funds and can ship goods with an assurance that payment of actual funds is made.

Instant bank to bank transactions may also be effected using the network system. As shown in Figure 12, a banking teller may accept a non-on-us check. The bank will send the check information to the switch which routes information to payor bank and to the depositor bank and initiates settlement. The switch will credit the depository bank and debit the payor bank. The payor bank receives the transaction information, checks its customer's (check writer's) balances, and debits its (payor's) account and puts a hard memo post hold on its check writer customer.

Figure 10 illustrates a consumer on-line purchase with the system. The system contrasts with current network payment conventions. Presently, a customer will log on to a merchant site, select a vendor and make a purchase item selection from a catalog menu of items displayed or made available for sale. After the purchase selection, the consumer types in a credit card number that is submitted for credit card authorization such as VISA® or MasterCard® approval from a third party which may incur a delay in order processing . The consumer's credit card is debited and the store receives a

